NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/85

# LICENSEE EVENT REPORT (LER)

| FACILITY NAME (1) | DOCKET NUMBER (2) | PAGE (3) |
|---|---|---|
| CALVERT CLIFFS, UNIT 2 | 0 5 0 0 0 3 1 8 | 1 OF 0 3 |

TITLE (4)
D/G Inoperability

| EVENT DATE (5) | | | LER NUMBER (6) | | | REPORT DATE (7) | | | OTHER FACILITIES INVOLVED (8) | |
|---|---|---|---|---|---|---|---|---|---|---|
| MONTH | DAY | YEAR | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | MONTH | DAY | YEAR | FACILITY NAMES | DOCKET NUMBER(S) |
| 0 4 | 2 6 | 8 4 | 8 4 | — 0 0 5 | — 0 0 | 0 5 | 2 4 | 8 4 | N/A | 0 5 0 0 0 |
| | | | | | | | | | | 0 5 0 0 0 |

| OPERATING MODE (9) | 6 | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11) | | | |
|---|---|---|---|---|---|
| POWER LEVEL (10) | 0 0 0 | 20.402(b) | 20.405(c) | 50.73(a)(2)(iv) | 73.71(b) |
| | | 20.405(a)(1)(i) | 50.36(c)(1) | 50.73(a)(2)(v) | 73.71(c) |
| | | 20.405(a)(1)(ii) | 50.36(c)(2) | 50.73(a)(2)(vii) | OTHER (Specify in Abstract below and in Text, NRC Form 366A) |
| | | 20.405(a)(1)(iii) | X 50.73(a)(2)(i) | 50.73(a)(2)(viii)(A) | |
| | | 20.405(a)(1)(iv) | 50.73(a)(2)(ii) | 50.73(a)(2)(viii)(B) | |
| | | 20.405(a)(1)(v) | 50.73(a)(2)(iii) | 50.73(a)(2)(x) | |

LICENSEE CONTACT FOR THIS LER (12)

| NAME | TELEPHONE NUMBER |
|---|---|
| | AREA CODE |
| P. PIERINGER, SR. ENGINEER-OPERATIONS | 3 1 0 2 1 6 0 1 - 1 4 1 7 4 2 |

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

| CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPRDS | | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPRDS | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |
| | | | | | | | | | | | |

| SUPPLEMENTAL REPORT EXPECTED (14) | | EXPECTED SUBMISSION DATE (15) | MONTH | DAY | YEAR |
|---|---|---|---|---|---|
| YES (If yes, complete EXPECTED SUBMISSION DATE) | X NO | | | | |

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

With the Plant in MODE 6, an electrical lineup was performed to allow preventive maintenance on 24A 480V AC Bus. This lineup powered 21 Diesel Generator (DG) auxiliaries from a bus receiving its backup power from 12 DG, thereby causing a loss of independence between 21 and 12 DGs. Although 21 DG was considered inoperable at this point, that fact was not conveyed to personnel on subsequent shifts. Since only one DG is required operable in MODE 6, no technical specification action statements were entered and hence no log entry to the effect that 21 DG was inoperable was made. The following shift, not realizing the lack of independence, removed 12 DG from service, which resulted in inoperability of both DGs. Believing 21 DG to be operable, T.S. 3.8.2.2 was violated in that containment integrity was not established within 8 hours. To prevent a recurrence of a similar event the conditions surrounding this event will be reviewed with all licensed personnel. Additionally, lists of equipment required for the operability of each DG have been compiled for use in aiding the operator in ascertaining the operability of required DGs prior to removing the redundant DG from service.

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| CALVERT CLIFFS, UNIT 2 | 0 5 0 0 0 3 1 8 | 8 4 | — 0 0 5 | -- 0 0 | 0 2 OF 0 3 |

TEXT (If more space is required, use additional NRC Form 366A's) (17)

During this event Unit 2 was in MODE 6 with a refueling outage in progress. The reactor vessel head (RPV) was decensioned and reactor vessel water level ranged between 1.2 and 1.5 feet above the bottom of the hot leg. Primary temperature ranged between 106° and 112° F and the steam generator (SG) manways were removed. No core alterations had yet been performed and none were scheduled during the period of concern. No reactivity changes occurred during the period of concern.

At 2115 on April 25, 1984, 24A 480V AC Safety bus (ED-BU) was removed from service for preventive maintenance. To maximize 21 DG (EK-DG) availability, 21 DG auxiliaries (Fuel oil transfer pump DC-9, room ventilation fan VJ-Fan, air start system air compressor LC-CMP, and various other engine auxiliaries LB-EHT, P and LA-EHT, P), normally supplied from 24A 480V AC Bus via MCC 204R (ED-BU), were kept energized by powering MCC 204R from MCC 214R (ED-BU) via a tie breaker (ED-BKR). This lineup, which is shown in the drawing (see Attachment 1), allowed 12 DG (EK-DG) to power 21 DG auxiliaries but in turn removed the independence between the two DGs. 21 DG was declared out of service, but not logged as such since T.S. 3.9.1.2 requires only one diesel to be operable in MODES 5 and 6. Had the unit been in a higher mode, less severe consequences would have occurred as the log entry concerning entry into a T.S. action statement would have prevented 12 DG from being taken out of service.

At 0625 on April 26, 1984, licensed personnel on the next shift failed to recognize the dependence of 21 DG on 12 DG and placed 12 DG out of service so preventive maintenance could be performed. Although operations personnel were aware that Unit 2 480V Bus 24A was out of service, the correlation was not made between that work and its effect on 21 DG operability. Consequently, both 12 and 21 Diesels were made inoperable.

At 1615 on April 26, 1984, a Senior licensed operator noted that both 12 and 21 DGs were inoperable and containment integrity had not been established as required by T.S. 4.8.2.2. Restoration of 12 DG to operability was in progress at the time and was continued. At 2105 12 DG was declared operable terminating the event.

During this event, the 2 500KV offsite power circuits and the 69KV SMECO offsite power circuit remained operable. Had the 2 normal offsite power circuits been lost during the event, the 69KV SMECO power supply could have been aligned to Unit 2 to supply the safety loads required for shutdown operation. Had a total loss of offsite power occurred during the event, DG 11 would have automatically started and paralleled to Unit 1 Bus 11 (EK-DG). DG 21 would have automatically started and paralleled but would have eventually shutdown when the fuel oil day tank was depleted or on a fault condition caused by the high DG room temperature (because of the inoperable ventilation fan). Existing inspection procedures and Control Room alarms would have ensured the operators' awareness of these conditions prior to an actual diesel trip condition. By realigning 11 DG to Unit 2 4KV Bus 21 and 21 DG to Unit 1 4KV Bus 14, an independent DG would be available for each unit allowing, in this case, Unit 1 to be safely shutdown and Unit 2 to be maintained in a MODE 6 configuration.

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TEXT (If more space is required, use additional NRC Form 366A's) (17)

Procedurally, the Unit 2 operations staff would be expected to implement the abnormal operating procedure dealing with loss of shutdown cooling should a total loss of offsite power occur. For various times after shutdown, this procedure provides time periods until core boiling and fuel uncovery. Following a complete loss of shutdown cooling, the calculations supporting this information assume the reactor coolant system (AB) is drained to the bottom of the hot leg, that initial RCS temperature is 150° and the reactor vessel head is removed. All of these conditions are conservative to those actually existing. Had an offsite power loss occurred at the time of maximum decay heat for this event (when both DGs first became inoperable) the operator would have determined he had approximately 18 minutes until primary coolant saturation temperature was reached and 68 minutes prior to the start of fuel assembly uncovery. As the required electric system lineup could be established well within the time before fuel uncovery, it is concluded that the loss of offsite power condition could not have produced consequences of a more serious nature.

To prevent a recurrence of a similar event the following corrective actions will be (or have been) taken:

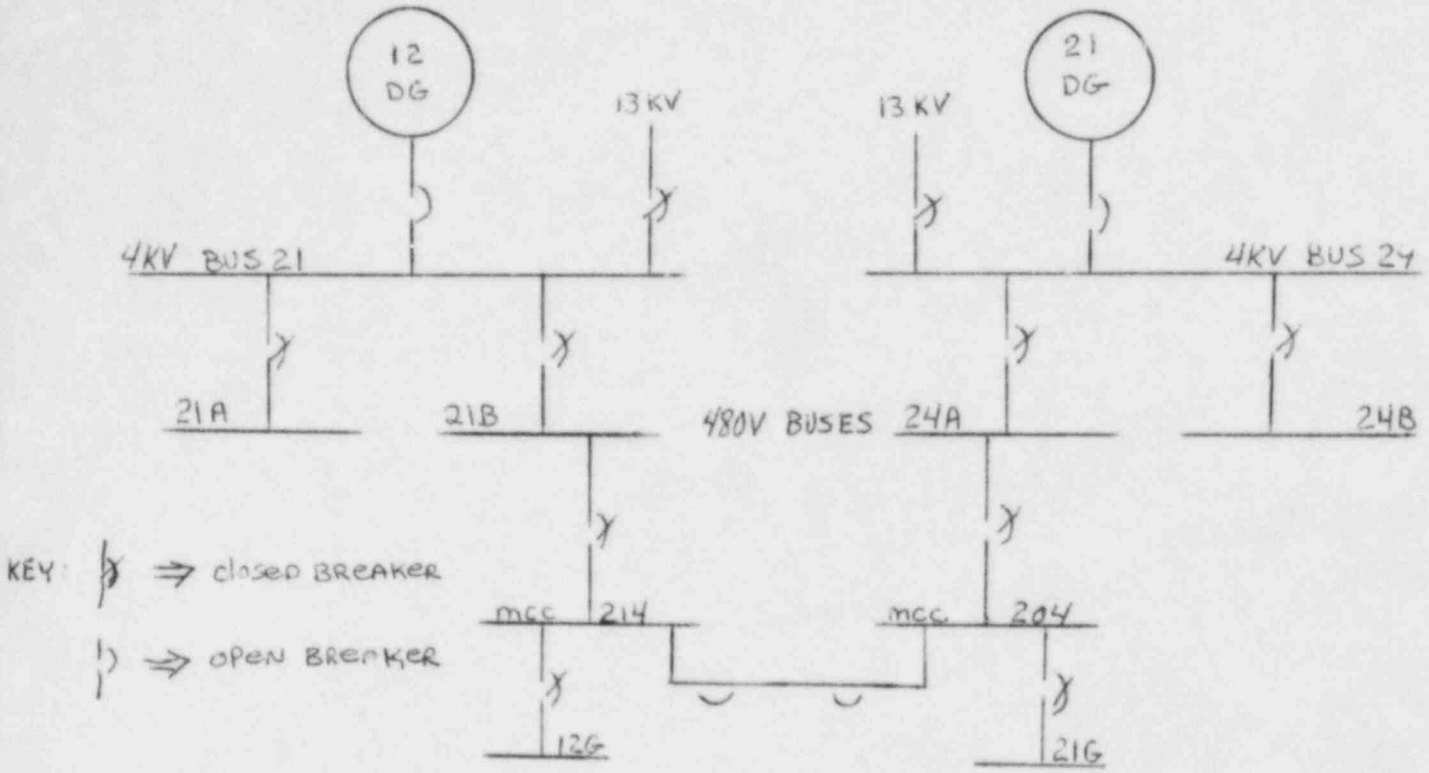
1. A list of equipment required to maintain DG operability has been prepared for each DG. When a condition arises which requires a DG to be placed out of service, these lists which will become part of the Calvert Cliffs Operating Manual, are used as an operator aid for verifying the operability of the redundant DG. These lists include both mechanical and electrical systems, which are required to maintain DG operability.

2. All licensed operators will receive training during the annual requalification cycle on the conditions surrounding this event. Particular emphasis will be given to the role electrical distribution plays in supporting DG operability.

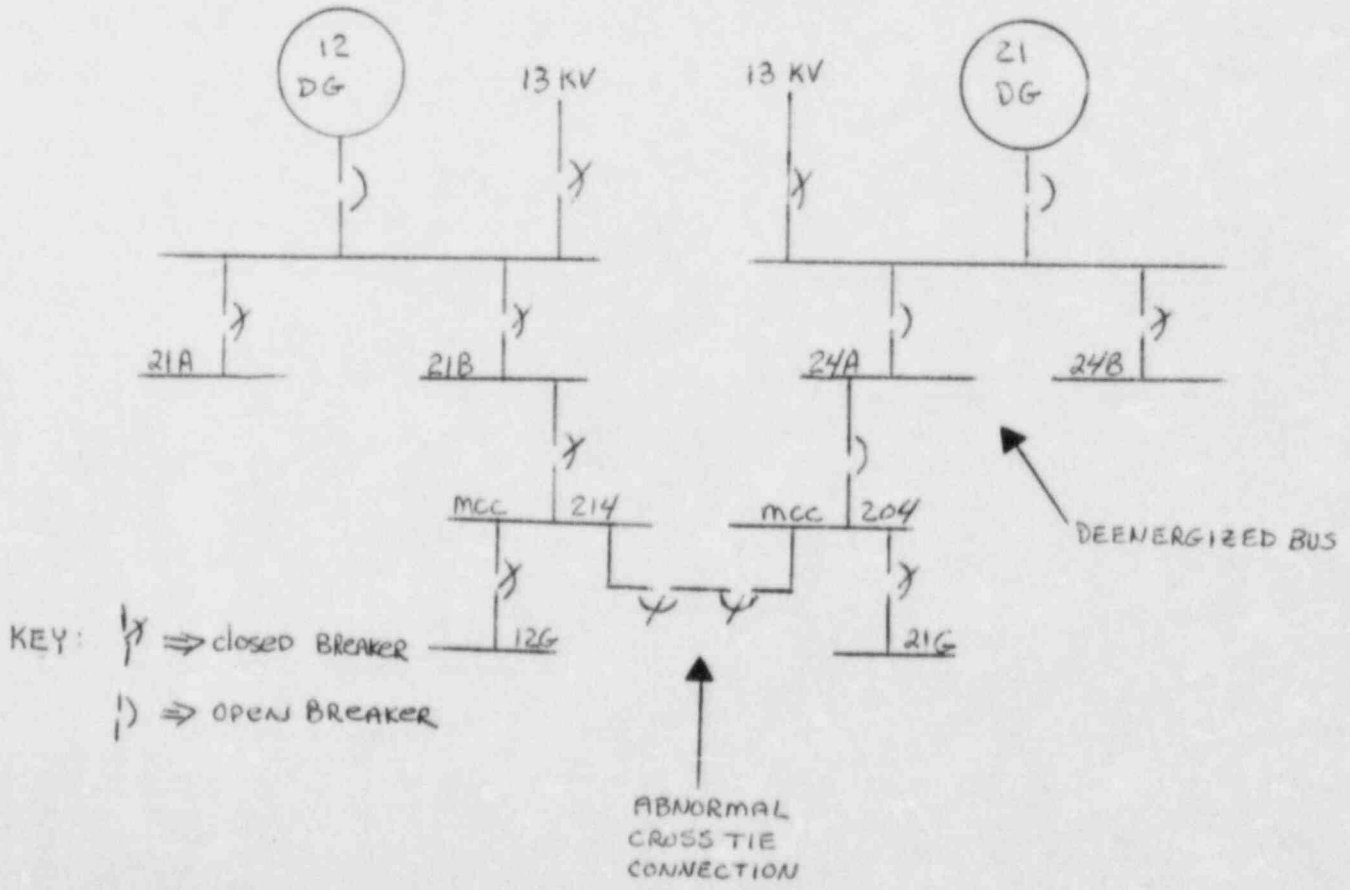
No similar events have been reported.

**ATTACHMENT 1**

NORMAL LINEUP

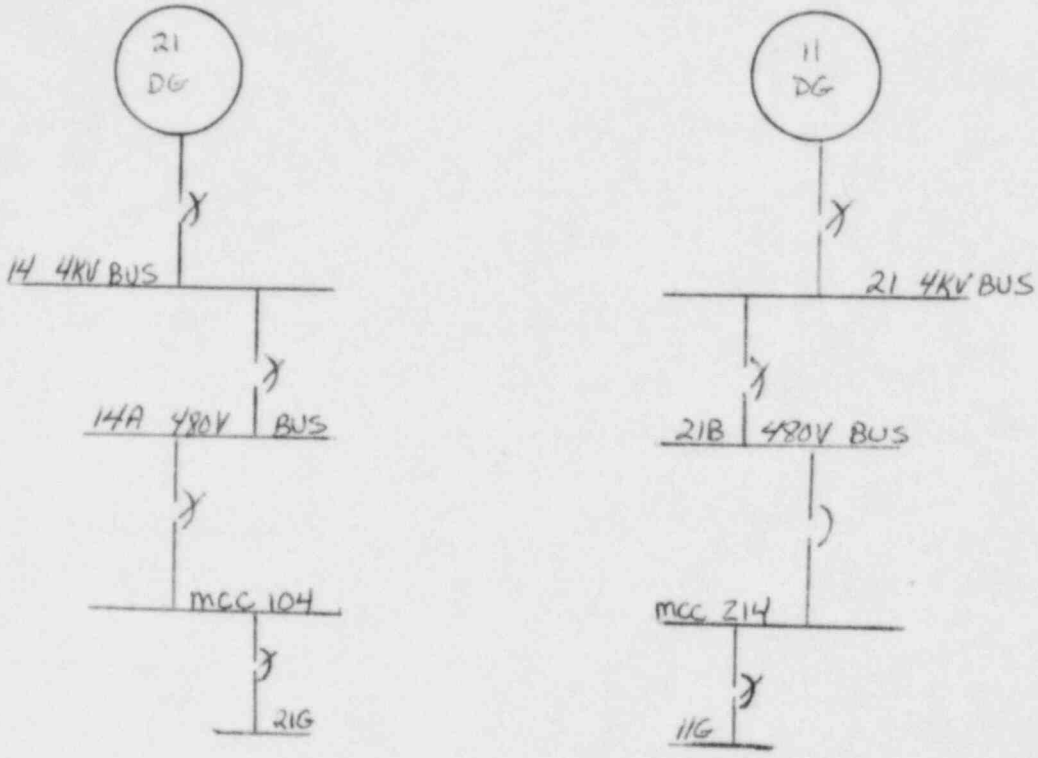



EVENT LINEUP



**ATTACHMENT 2**

REQUIRED ELECTRICAL LINEUP
DURING LOSS OF OFFSITE POWER




KEY : ⇒ CLOSED BREAKER

⇒ OPEN BREAKER

BALTIMORE GAS AND ELECTRIC COMPANY

P.O. BOX 1475

BALTIMORE, MARYLAND 21203

NUCLEAR POWER DEPARTMENT
CALVERT CLIFFS NUCLEAR POWER PLANT
LUSBY, MARYLAND 20657

May 24, 1984

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington D.C. 20555

Dear Sir:

The attached LER 84-05 is being sent to you as required by 10 CFR 50.73.

Should you have any questions regarding this report, we would be pleased to discuss them with you.

Very truly yours,

LB Russell

L. B. Russell
Plant Superintendent

lal

LBR:PAP:srm

cc: Dr. T. E. Murley
Director, Office of Management Information and Program Control
Messrs: A. E. Lundvall, Jr.
J. A. Tiernan

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